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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, SIN J

ART UNIT PAPER NUMBER

1752

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/784,806

Applicant(s)

KIM ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-32 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10-26-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: in [0024] (third line), applicants need to delete "any". In [0025], third line, applicants need to insert --- which --- between "group," and "is". In [0026], first line following the chemical formula, applicants need to change "wherein R₁, R₂ and R₄ are" to --- wherein R₁ and R₂ are ---. In [0027], first line following the chemical formula, applicants need to change "wherein R₁, R₂, and R₄ are" to --- wherein R₁ and R₂ are ---. In [0028], first line following the chemical formula, applicants need to change "wherein R₁, R₂, and R₄ are each independently" to --- wherein R₄ is ---. In [0033], fourth line, applicants need to delete "norbornene". In [0034], fourth line, applicants need to delete "norbornene".

Appropriate correction is required.

Claim Objections

2. Claims 4 and 5 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

In claim 4, applicants recite that the monomer of Formula (I) of claim 1 is made by reacting the alcoholic compound of Formula (III) with a compound selected from 2-chlorocarbonyl-5-norbornene, *acryloyl chloride* and *methacryloyl chloride*. However, when one reacts the alcoholic compound of Formula (III) with *acryloyl chloride* or

methacryloyl chloride, the monomer of Formula (I) of claim 1 cannot be obtained.

Therefore, claim 4 fails to further limit the subject matter of claim 1.

In claim 5, applicants recite that the monomer of Formula (II) of claim 2 is made by reacting the alcoholic compound of Formula (III) with a compound selected from 2-chlorocarbonyl-5-norbornene, acryloyl chloride and methacryloyl chloride. However, when one reacts the alcoholic compound of Formula (III) with 2-chlorocarbonyl-5-norbornene, the monomer of Formula (II) of claim 2 cannot be obtained. Therefore, claim 5 fails to further limit the subject matter of claim 2.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 4, 12, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "wherein R₁, R₂ and R₄ are each . . ." in the first line following the chemical formula. There is insufficient antecedent basis for "R₄" in the claim (there is no "R₄" in Formula (I)).

5. Claims 2, 5, 13, 14, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "wherein R₁, R₂ and R₄ are each . . ." in the first line following the chemical formula. There is insufficient antecedent basis for "R₁" and "R₂" in the claim (there is no "R₁" or "R₂" in Formula (II)).

6. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, applicants recite that the monomer of Formula (I) of claim 1 is made by reacting the alcoholic compound of Formula (III) with a compound selected from 2-chlorocarbonyl-5-norbornene, *acryloyl chloride* and *methacryloyl chloride*. However, when one reacts the alcoholic compound of Formula (III) with acryloyl chloride or methacryloyl chloride, the monomer of Formula (I) of claim 1 cannot be obtained. Therefore, present limitation of claim 4 renders scope of the claim indefinite.

7. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, applicants recite that the monomer of Formula (II) of claim 2 is made by reacting the alcoholic compound of Formula (III) with a compound selected from 2-chlorocarbonyl-5-norbornene, *acryloyl chloride* and *methacryloyl chloride*. However, when one reacts the alcoholic compound of Formula (III) with 2-chlorocarbonyl-5-norbornene, the monomer of Formula (II) of claim 2 cannot be obtained. Therefore, present limitation of claim 5 renders scope of the claim indefinite.

8. Claims 6, 7, 15, 21, 24, 27, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "wherein R_1 , R_2 and R_4 are each" in the first line following the chemical formula. There is insufficient antecedent basis for " R_4 " in the claim (there is no " R_4 " in Formula (IV)).

9. Claims 6, 7, 15, 21, 24, 27, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites that " n " (degree of polymerization) is an integer from 1 to 1000. However, claim 6 is drawn to a polymer, and when " n " is 1, it is not a polymer, but a monomer. Therefore, present limitation of claim 6 renders scope of the claim indefinite (for the same reason, applicants need to make correction in present specification, [0026], fourth and fifth lines following the chemical formula).

10. Claims 8, 9, 16, 22, 25, 28, and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "wherein R_1 , R_2 and R_4 are each" in the first line following the chemical formula. There is insufficient antecedent basis for " R_4 " in the claim (there is no " R_4 " in Formula (V)).

11. Claims 10, 11, 17, 23, 26, 29, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 recites the limitation "wherein R_1 , R_2 , and R_4 are each . . ." in the first line following the chemical formula. There is insufficient antecedent basis for R_1 or R_2 in the claim (there is no R_1 or R_2 in Formula (VI)).

12. Claims 10, 11, 17, 23, 26, 29, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, applicants recite that "n" (degree of polymerization) is an integer from 1 to 1000. However, claim 10 is drawn to a polymer, and when "n" is 1, it is not a polymer, but a monomer. Therefore, present limitation of claim 10 renders scope of the claim indefinite (for the same reason, applicants need to make correction in present specification, [0028], fourth and fifth lines following the chemical formula).

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramsbey et al (US 6,667,243 B1) (with Sechi et al (4,732,838), which is cited here to support the Examiner's position that it is conventional practice in manufacturing a

semiconductor device to strip the photoresist pattern after etching a feature on a substrate).

Ramsbey teaches (see col.2, lines 6-13) a method of manufacturing a *semiconductor device*, comprising the step of etching a feature on a substrate in accordance with a photoresist mask and *stripping the photoresist mask* by plasma removal. Ramsbey's semiconductor device (the final product) teaches present semiconductor device of claims 30-32. In fact, any semiconductor device (as a final product) would teach present claims 30-32 because present claims, which are drawn to a semiconductor device, are written in *product-by-process claim languages* and because it is conventional practice in manufacturing a semiconductor device (as evidenced by Sechi et al, col.1, lines 18-34) to strip the photoresist pattern after etching a feature. Therefore, the prior art teaches present inventions of claims 30-32.

Allowable Subject Matter

15. Claim 3 is allowed. The only reference that teaches present alcoholic compound of Formula (III) is Kim et al "Nonshrinkable Photoresists for ArF Lithography" Advances in Resist Technology and Processing XX, Proceedings of SPIE Vol. 5039 (2003), pg.689-697, and the reference cannot be a prior art under 35 USC 102 against present invention of claim 3 because the reference was published by *the same inventive entity* in *June, 2003*.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333.

The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. J. Lee

S. Lee
November 26, 2004

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